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EDUCATION & PROFESSIONAL STATUS

Water Services:

City & Guilds Certificate, the Certificate for Utility Operations
– Water Distribution - Water Regulations for Enforcement Staff.

Merchant Navy & General Engineering Qualifications:

B.O.T. 1st Class Certificate of Competency (Motor).
O.N.D. & Endorsement in Marine Engineering.

United Kingdom Accreditation Service:

Assessor Training Course.
Uncertainty of Measurement Course.

PROFESSIONAL MEMBERSHIPS

FCIPHE, (RP), IEng, IMarEng., M.I.MarEST.
UK Register of Expert Witnesses.

KEY AREAS OF EXPERTISE.

- My professional memberships include a Fellowship within the Chartered Institute of Plumbing and Heating Engineering, and a Registered Plumber.
- A Mechanical and Marine Engineer with wide experience in the operation of all areas of Power Plant Operation, its Installation and Commissioning.
- Experience in the Installation, commissioning and use of a wide range of Pumping Systems for many duties. This experience has been widely shared with the designers of packaged Pump Systems for use with Wholesome Water. It has also been of benefit in the design of Heating Systems within Domestic and Commercial Properties.
- The design of Domestic and Commercial Wholesome Water Systems.
- The design of Thermostatic Mixing Valves for both within domestic and commercial premises. Regarding their correct function as anti-scald devices.
- The application of the Water Supply (Water Fittings) Regulations, Water Supply (Water Quality) Regulations and the Building Regulations to building water systems.
- Expertise in Legionellae and other waterborne bacteria risk management.

KEY PROFESSIONAL EXPERIENCE.

RAH Consultants Ltd. 2016 to date.

Since November 2016 I have been a Director of the above Company, RAH Consultancy is now the trading name of this company.

RAH CONSULTANCY. 2004 – 2016.

A company operating in many areas of Water Engineering Consultancy including system design; with regard to Water and Building Regulatory issues. We are also regularly employed in engineering cases requiring expert evidence.

We have advised major engineering and construction firms with projects involving the water systems within multi storey domestic accommodation, scientific laboratories and other major sites.

We have designed and overseen the construction of domestic hot and cold water systems.

RAH Consultancy celebrated its 10th Anniversary in 2014 and now employs three keen trainee staff.

PROFESSIONAL DEVELOPMENT.

I am a Fellow of the Chartered Institute of Plumbing and Heating Engineering and have recently become a Registered Plumber. This qualification allows me to operate as an Approved Contractor within the meaning of the Water Supply (Water Fittings) Regulations 1999. I can therefore “sign-off” plumbing systems on works carried out by or under my direction as being compliant with the Water Regulations. I have long been an Incorporated Engineer and am now actively applying for promotion to chartered status under the auspices of CIPHE.

I have recently produced several articles which have appeared in the Solicitor’s Journal and the P&HE Journal. Two of these articles have related to the use of Thermostatic Mixing Valves in differing installations and the latest article concerned Plumbing Products and the requirements for CE Marking. Further articles are in production.

I have been co-opted onto a Technical Committee of the Chartered Institute and have been asked to form an Institute editing committee. The exact form of the task is still being decided but this will allow me to remain in contact with all the latest developments on our profession.

KEY CONTRACTS

- I acted as the Secretary of the Advisory and Audit Committee of the KIWA Watertec Water Regulations Approval Scheme and the KIWA expert group for their Certification Scheme. These Committees act as the overseeing body for the Schemes which offer approval of products to the requirements of the Regulator’s Criteria and Certification of Water Products to a range of Standards. The Committees operate as the overseeing body which ensures the probity of operation of KIWA. I acted as Secretary of the AAC and Kiwa Expert Group from 2008 - 2018.

Consultancy Projects.

- Operating in cooperation with Magic Thermodynamic Box Ltd in the provision of technical support for this revolutionary Company. We are proud to be involved in the ongoing development of this product and to be able to comment on the extensive laboratory testing and field work that they are undertaking. RAH Consultancy has also advised on the production of company's literature.
- I designed a course, and then acting as a lecturer with regard to the current Water Regulations and the Installation, Commissioning and Testing of Thermostatic Mixing Valves meeting TMV2 and TMV3 requirements. The work included the provision of all course notes, exam papers etc for an in-house City and Guilds course on behalf of a large water condition monitoring organisation. The work was designed to increase the operating capabilities of this company's staff.
- Work for a Manufacturer of Jug Filters regarding the design of a new product range for direct connection to the water supply. The gaining of WRAS product certification for the product's use within the UK was obtained and further worldwide launches are to follow.
- The provision of detailed research regarding the fitness for purpose of various Water Conditioners; this research was conducted on behalf of the Advertising Standards Authority. The culminating reports were used in assessing the content of a number of adverts regarding such devices.
- Advising the Dutch National Test-house KIWA on the design and testing of Thermostatic Mixing Valves for Domestic and Health-Care applications.
- Designing a Thermostatic Mixing Valve to comply with the requirements for anti-scalding TMV2 and TMV3 Schemes. The work was for a major manufacturer of this type of device and the time scale for the project was under serious threat, RAH Consultancy was called in and under took extensive examination of their design. Within a short time frame we were successful in producing design changes with which it was possible to return the project to schedule.

Water Regulations.

- We worked as Engineering Consultants for construction company Mace Ltd providing them with our expertise regarding the Water Regulations. This was one of our major projects and we prided ourselves on our selection by Mace Ltd to carry out this work. RAH Consultancy were responsible for examining every aspect of the water system design of taps and fittings which were to be used on the South Bank Tower. On our recommendation water fittings which were to be used were deferred until we were satisfied the Regulations were met; and some were even refused on our

recommendation. The work relied on close liaison with Thames Water and that Undertakings trust in the integrity of our reports.

The work was completed in advance of schedule and all the operations were signed off by Thames Water without the need for any further design or construction changes after our interventions.

Due to our success with this project we were invited to submit a proposal for a further Mace project. This project is eagerly awaited.

- Currently acting for Challis Water Controls in the preparation of the documentation for their Water Regulations and Buildcert Approvals. This entails involves the identification of the materials of construction of the devices and some design changes to satisfy the technical aspects of the Regulations.
- Work for FM Mattsson, a Swedish tap manufacturer. The work required our investigation of the test facility within their factory for the design of safe working temperature Thermostatic Mixing Valves. The test rig was re-designed to our specifications and this has enabled them to test a series of Thermostatic Valves that have since achieved both TMV2 and TMV3 certification to the UK's requirements. We now act as their agent for the gaining of UK Water Approvals.
- Another of our major customers has been one of the world's leading medication manufacturers. We were engaged to undertake an inspection of water systems at one of their research facilities. Undertaking the necessary surveys, RAH Consultancy then drew up an action plan for this organisation, a meeting with the local Water Undertakers Inspector resulted in our schedule of works being accepted by the Water Undertaker.
- We acted as the Technical Consultant for Crosswater Ltd regarding the requirements of the Water Regulations. The work was ongoing for seven years and included the inspection of the quality of proposed purchases, advice on necessary technical alterations to specifications and the gaining of WRAS certification for their products. We were able to advise the client on changes to their materials of construction and the sourcing of components that were needed to meet the Regulations.
- RAH Consultancy worked with a UK representative of a major eastern manufacturer on the materials of construction required for a range of Water Storage Cisterns. This work involved liaising with the UK Materials Testing Houses to arrange for the testing of various products necessary for the design. We were able to provide the client with advice regarding Singapore and British Standards for the testing of the product; and explain these requirements to the client in a series of reports.

- Inspection of the complete water system within a major Superstore to ensure that the store was in compliance with the Water Regulations, provision of a report as to alterations necessary to make the building fully compliant.
- We acted as a Consultant to an Unvented Water Heater Manufacturer in the gaining of their Water Regulations Certification; this included the provision of material samples which were necessary to undertake testing to BS6920. The firm regarded our work as very useful and have since recommended us to two further overseas manufacturers for each of whom we have successfully got certification.
- Gaining Certification of different manufacturer's ranges of Thermostatic Mixing Valves. This work was carried out for five manufacturers in total and included submission of application forms and assembly of working drawings, statements of "listed materials etc. All submissions were successful.
- Design of a Type DC Backflow Prevention device for the Austrian Manufacturer of a range of invalid bathing equipment. The design was exclusively for use in invalid bathing including the manufacture of prototype devices. The device gained WRAS acceptance and became a "listed" product. The work required RAH Consultancy to travel extensively to Austria where the design work was undertaken and advise on the correct testing of the product during its inception. We were fully involved from the concept stage onwards.

Expert Witness Experience

- The provision of Expert's advice regarding a Legionella death at a hotel in Egypt. This work included the inspection of records of the Hotel's internal inspections and risk analysis. We considered the legionella risk requirements of UK, Australia and the United States and compared these with the International Legionella advice provided for the hotel sector. Our report was discussed between the opposing experts, but it was found to be impossible to agree a joint statement; the resulting case was satisfactorily settled in favour of our client, the widow of the deceased.
- Acted as a joint expert on behalf of a commercial customer and water undertaking regarding the water metering of a property. The report drew upon the author's widespread knowledge of water metering and was used to advise the court as to the correct provision of water meters for the property and the likelihood of their failure in service.
- The provision of expert evidence regarding the use of hose union bib taps within farm buildings. Appearance in court acting as an expert on behalf of the farm owner regarding Water Regulation violations.

- Providing an expert report with regard to a bore-hole system on a property in the north of England. This required inspection of the property water supply, taking of water samples and instructing a laboratory on the required testing. Provided a report on the borehole's compliance with good practice and the rehabilitation of the same.
- Advised at a property in North Wales as to the quality of the plumbing and heating systems within their premise. A detailed report was written regarding system compliance with the Water Regulations, BS 6700 and the Plumbing Design Guide. Negotiated with the Builder as to actions he needed to take. On his eventual agreement with the reports findings the total plumbing system was redesigned by myself, working drawings provided and all the plumbing re-installed in accordance with best practice. The plumbing works were overseen by myself, and it was rebuilt and commissioned to the complete satisfaction of the building's owner and without occasion to go to court.
- Advice regarding the failure of a water supply system within a hotel situated in Northern Ireland where the local water undertaking and his contractor who had been conducting a mains water-pipe repair in the area. Testing of the failed fitting and provision of a report on the failure.

Previous Experience

WRc-NSF. 1989 – 2004

Richard Hurst worked for the well known and respected consultancy company, WRc. This company was privatised in 1989 being formerly the research and advisory arm of the water industry. He was employed in an advisory role to the water industry, particularly regarding Water Regulations and their predecessor, Water Byelaws.

Promoted Contract Manager, with responsibility for all testing services other than Water Byelaws compliance. He was also made responsible for all Water Byelaws related consultancy operations.

Finally promoted by WRc-NSF, to Senior Account Executive. His role was to maintain all previous management and contract responsibilities but also to undertake a major new sales role regarding the company's new Certification Scheme "Buildcert". "Buildcert's" function being to expand the company testing role to encourage full product approval, assessment and certification, rather than Regulation's compliance.

I was proud to be responsible for the commissioning of the water meter test rig built for use in the laboratory. I suggested design improvements and authored the laboratory control procedures, test and calibration procedures, quality control procedures, and uncertainty of measurement calculations for this test rig. He subsequently designed and built extensions to this rig; to enable testing of large bore meters and single and

multi-jet meters. I was responsible for obtaining initial NAMAS and later UKAS Accreditation for these rigs and maintaining the accreditation in subsequent years.

I was responsible for the initial ideas that lead to the initiation by the Health Service of the D 08 Standard for the testing and third-party certification of Thermostatic Mixing Valves for Health Care Premises. This included initiating the project with the NHS Estates. I then sat on the expert's panel writing the Standard. I promoted the plan to manufacturers which led to the initiation of the TMV3 Scheme and its successful operation for over 20 years.

I was once again solely responsible for writing the laboratory test and calibration procedures, rig design, training of laboratory staff and gaining of UKAS Certification at the first attempt.

During this period, I was also acting for some time as the internal quality control auditor for all laboratory systems under the auspices of UKAS.

KEY ROLES.

Water Regulations Advisory Service (WRAS).

(WRc-NSF managed on behalf of the UK Water Industry the advisory scheme set up to ensure public compliance with Water regulations. The General Public, Plumbers, and Water Fittings Manufacturers needed access to current advice regarding the installation and design of water fittings and water systems. WRAS was preceded by a similar scheme operated by WRc.)

I held a key position in the provision of these services and was responsible for all consultancy contracts arising from Manufacturer's needs for design and installation advice. Consultancy was offered to provide designers, operators and users of the UK water supply with guidance; to ensure their goods were compatible with the requirements of the appropriate regulations. New products often require interpretation of the regulations where no previous official guidance exists.

Assessments would enable advice on initial design and interpretation of the regulations to be given to the customer, whilst also presenting to the water industry and Regulator (when necessary); the suggested design and interpretation for their agreement. The service always endeavoured to reach the most cost effective and pragmatic solution for the manufacturer whilst ensuring the correct interpretation and application of the Byelaws or Regulations.

Projects undertaken during the many years of his working for the company numbered more than 500. The majority involved the failure of a water-fitting to be properly designed, manufactured, or installed.

Overseas Consultancy.

I actively sought out overseas Certification Bodies and negotiated agreements to provide WRc-NSF consultancy services to manufacturers. This service would provide design information and product assessment to ensure compliance with relevant local legislation in Australia and the United States.

Failure Consultancy.

Clients from the manufacture, installation, use or insuring of water-fittings and systems sought advice on the failure or effectiveness of such systems and devices. Analysis of the articles concerned could be provided, or of their method of installation, and reports submitted that assessed the claim and suggested cause and remedy. These reports were often the basis of expert witness cases.

Expert Witness Experience.

I was engaged in a considerable number of Expert Witness cases on behalf of a range of clients. This work formed the basis for the continuing work I have undertaken since forming my own company.

PRE WRC-EXPERIENCE.**SELF EMPLOYED 1984 – 1988.**

Contractual work on engineering projects including expatriate operation and maintenance of mainly diesel-powered power stations throughout the world.

HAWKER SIDDELEY POWER ENGINEERING LTD. 1980 – 1983.

I worked as a Mechanical Commissioning Engineer; in charge of a team of five persons. The work was undertaken on heavy oil driven power stations at New Marte, Nigeria, and the North Mole, Gibraltar. The two stations required commissioning after completion and due to delays in construction Richard Hurst was also involved in the installation of copper and galvanised piping systems, pumps and vessels to enhance the station delivery.

TILSLEY & LOVATT LTD 1978 – 1980.

For one year I worked on the installation and construction of engines and pipe-work at the New Marte power station in Nigeria. Prior to this I was engaged on large engine overhaul projects at sites within the UK at Beaconsfield, Skelmersdale and Avonmouth.

CANADIAN PACIFIC 1976 – 1978.

Served as the Second Engineer Officer on the bulk carrier fleet of Canadian Pacific. Served on a range of vessels of up to 250,000 tons. Completed two voyages, as officer with full responsibility for the operation of planned maintenance systems upon these vessels. My career at sea was terminated by an accidental slip and fall down a ship's hatch whilst dry docking in Setubal. Portugal, this resulted in a fractured pelvis that required six months recuperation.

OCEAN FLEETS 1966 – 1976.

Served in all ranks from Cadet Engineer Officer to Second Engineering Officer. Completed a five-and-a-half-year apprenticeship that included six months experience within the companies own workshops and with the ship repair shore-based staff. Attained a First-Class Certificate of Competency and sailed as Second Engineer Officer at the early age of 26. I was experienced in a wide range of engineering disciplines and able to operate and make decisions without reference to higher authority.